

**POLICY SYNTHESIS****FOOD SECURITY RESEARCH PROJECT - ZAMBIA**

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## **INPUT CREDIT PROVISION FOR COTTON PRODUCTION: LEARNING FROM AFRICAN NEIGHBORS AND MEETING ZAMBIA'S CHALLENGES**

**\*Stephen Kabwe and David Tschirley**

### **MAIN POINTS**

1. Smallholder farmers in Africa require reliable access to purchased production inputs and credit to take advantage of export opportunities from production of cotton.
2. Unregulated and poorly coordinated markets for cotton, production inputs and credit have too often failed to deliver sustainable production finance to farmers for cotton production resulting in a variety of different approaches to these problems among African countries.
3. Among the countries studied, approaches have varied from State monopolies to private markets with several large firms managing to achieve temporary duopolies.
4. Zambia has been relatively successful in dealing with the input-credit needs of cotton farmers for periods of time but the system has been unsustainable, breaking down from time to time.
5. Currently the Zambia government and private sector participants are proposing highly collaborative regulation of the sector driven by all stakeholders. The revised Cotton Act provides a framework under which this may be able to happen in Zambia and recent activities of ZACOP, in collaboration with CAZ are very much in this spirit.

**INTRODUCTION:** Concerns about input credit supply have long been at the centre of debates regarding cotton sector organization in sub-Saharan Africa. This concern has been based on four widely appreciated facts: 1) that cotton production requires substantial use of external inputs; 2) that smallholder farmers are typically cash constrained and find it difficult to finance input purchases; 3) that input markets are very weak in rural Africa, especially for specialized items such as treated seed, and finally; 4) that rural credit markets for agriculture in Africa are nearly non-existent. Addressing these problems to ensure adequate access to inputs by smallholder cotton farmers has been an ongoing challenge in every cotton producing country of Africa for as long as the crop has been produced.

**OBJECTIVE:** This Policy Synthesis draws on recent comparative work across nine countries of sub-Saharan Africa (Zambia, Mozambique, Zimbabwe, Tanzania, Uganda, Cameroon, Mali, Burkina Faso, and Benin) to provide background on the range of input

provision systems observed on the continent, and to assess how Zambia compares to its neighbors in this regard. The paper also outlines key policy implications for Zambia.

**METHODS:** The comparative study developed a typology of African cotton sectors, developed expectations regarding the likely performance of each on various measures, and then assessed performance against these expectations. The typology identified national (public) monopolies in Mali and Cameroon, local (private) monopolies in Mozambique and Burkina Faso, concentrated systems (few private buyers of seed cotton) in Zambia and Zimbabwe, and competitively structured systems (many private buyers) in Tanzania and Uganda.

Table 1 provides summary information on the input supply systems in the study countries. Table 2 summarizes findings, comparing observed against expected performance across the various types of cotton sectors, and highlighting especially salient facts. The rest of

this brief provides background for interpreting Table 2.

**GOVERNMENT MONOPOLIES SHOW SIMILARITIES, BUT CAMEROON PERFORMS MUCH BETTER:**

This system is found in Cameroon and Mali. Under this system the purchase of seed cotton is regulated, there is no competition allowed. Only one Government agency is allowed to buy the seed cotton. The provision of cotton inputs is done by the Government agency to the farmer organization through in-kind system. The standard input package consists of treated seed, urea, compound, pesticides and some herbicides and it costs US\$119/ha for Mali and US\$123/ha for Cameroon. Credit repayment is around 90%.

**LOCAL MONOPOLY SYSTEM:** Burkina Faso and Mozambique practice this system. Competition is not allowed in the purchase of seed cotton either. There is more than one cotton buyer under this system unlike in the Government Monopoly System which has only one. Each buyer is assigned an exclusive geographical area in which to buy seed cotton. The provision of inputs by the firms to the farmers is on in-kind basis within the operational area/s.

In Mozambique, there is limited involvement of farmer organization in negotiating with ginners on prices of seed cotton or provision of other services. Key lessons from Mozambique's experience are, first, that a local monopoly system does not eliminate the possibility of serious credit default crises. Second, policy makers in local monopoly systems must choose their companies carefully. All companies in Mozambique face the same, very weak, regulatory capacity of government. Yet some have chosen to invest aggressively in improved input supply and extension, while others have operated for many years much like the new entrants in Zimbabwe, providing minimal quantities of poor quality input.

A key point to keep in mind as Burkina Faso moves down its reform path is that, despite the very developed structure and strong coverage of farmer groups within cotton areas, operational capacities remain very weak. While

they do receive and distribute inputs to members and organize the cotton market, neither UNPCB nor its regional unions are in a position to take over the importation and distribution of input to villages. Until this can happen, seasonal input credit from cotton companies will be critical to the sector's success.

**COMPETITIVE SECTORS:** The pre-reform cooperative-based cotton systems in Tanzania and Uganda led quickly after reform to highly competitive markets with 20 to 30 independent buyers competing for farmer production. Price competition was intense and farm prices improved, but each country witnessed the collapse of its input supply and extension systems. Initial efforts in both countries involved removing input supply from the private sector, to allow competition in the output market: Tanzania's Cotton Development Fund (CDF) created in 1999, and Uganda's similar collaborative approach between ginners and the country's public Cotton Development Organization (CDO). Each approach achieved some success but failed after two years due to management and design problems.

Since these initial failed attempts, the two countries have moved in dramatically different directions. Uganda has eliminated competition in the output market to facilitate input supply and extension by ginners (see Baffes, background paper on Uganda, 2007 for more detail), while Tanzania has maintained a competitive output market and used innovative approaches to provide some minimal level of input to farmers (Poulton and Maro, background paper on Tanzania, 2007). Uganda's zonal quota system features collaborative production planning among 2-3 ginners in each of 11 zones, prohibits cotton movement across zones, and facilitates sale of inputs at 50 percent of cost, with the subsidy implicitly collected in the price paid to farmers. Extension is a heavy focus in the system, with 7,000 demonstration plots and training days financed two-thirds by ginners and one-third by USAID. Despite these major efforts at input supply and extension, production in Uganda has not consistently risen above 20,000 to 25,000 tons of lint.

**Table 1: Summary of Input Supply Systems**

LESS COMPETITIVE ↑ ↑ ↑ ↑ ↑ ↑ ↑	Country	Current sector structure/ governance	Mechanisms for input credit supply	% of cotton input sourced independently by farmers	Indicators				
					Receiving some cotton input credit	Using inorganic fertilizers	Adequacy/quality of package received on credit	Cost	Credit repayment rates
	Mali	National monopoly	In-kind credit by CMDT to farmer cooperatives; relatively little operational involvement by farmers	Negligible	~ 100% cotton farmers, >90% all farmers in cotton zones	~ 100%	Treated seed, urea, compound, pesticides, some herbicides; questions re seed quality and appropriateness of fert rec's	Std. pkg US\$119/ha ("at cost") 35%-45% of mean prod'n value	95%. Fell to 90% as early as 2001
	Cameroon	National monopoly	In-kind credit jointly managed & financed by SODECOTON & farmer apex. Decreasing involvement of SODECOTON	Negligible, but reliance on SODECOTON is decreasing	~ 100% cotton farmers, >90% all farmers in cotton zones	~ 100%	Treated seed, urea, compound, pesticides, some herbicides. Little or no adjustment to differing agroeco conditions	Std. pkg US\$123/ha ("at cost") 35%-45% of mean prod'n value	95%-99%. Fell to 90% 2006
	Burkina Faso	Local monopoly	In-kind credit by 3 companies to farmers, with some (limited) operational involvement of farmer orgs	Intention to transfer task to farmers, but limited progress	~ 100% cotton farmers, 85% of all farmers across whole cotton zone	~ 100%	Treated seed, urea, compound, pesticides, some herbicides. Little or no adjustment to differing agroeco conditions	Std. pkg US\$171/ha 45%-55% mean prod'n value. Seed sold at 55% of cost	95%
	Mozambique	Local monopoly	In-kind credit from ginning companies; highly varying quality; negligible involvement of farmer orgs	Negligible	~ 100% cotton farmers, >80% all farmers in key cotton zones	~ 0%	Highly variable across companies. Mix of treated & untreated seed. Some pesticides. Little or no fertilizer	Highly variable. Typically US\$10-US\$30/ha, 10%-20% mean prod'n value. Seed free	Highly variable: 60%-90%
	Zambia	Concentrated	In-kind credit from main ginning companies; no operational role to date for farmer orgs	Negligible	~ 100% cotton farmers, 30%-35% all farmers in cotton districts	20%-30% (foliar only, though not just for micro-nutrients)	Treated seed, pesticides (5-6 sprays), some foliar fert for 2-3 main companies; seed & limited pesticides from others	US\$20-US\$30/ha, 10%-20% mean prod'n value; some evidence that sold above market rates	Typically 85%-98%. Falls below 70% during periodic crises
	Zimbabwe	Concentrated (becoming Competitive)	In-kind credit from ginners; highly varying quality; main schemes (Cotco, Cargill) highly selective of best farmers, others get mostly poor farmers	Up to 60% early 2000s, now falling	90%-95% cotton farmers (up from 40% early 2000s). 70%-80% of all farmers in main cotton zones	45%, covering nearly 90% of cotton area	Cotco: treated seed, fertilizers, chemicals. Some newer companies only seed and limited chemicals	Cotco \$237/ha, 43% mean prod'n value. Others: US\$50-US\$90/ha, 33%-39% mean prod'n value	90% Has fallen since early 2000s
	Tanzania	Competitive	No input credit; passbook system for input supply linked to "forced savings"	% outside passbook: seed 75%, chemicals 50%-75%	0%	1%-2%	(Passbook, not credit) No treated seed; chemical qt's inadeq for full spraying regime (2-3 sprays for most farmers)	Seed US\$1-US\$2/ha. Chemicals variable, depending on passbook entitlement & cash purchases	NA
	Uganda	Hybrid (Competitive)	Cash sale by ginners at 50% cost, implicit recovery of subsidy in price	~20% Active secondary market in subsidized chemicals	(subsidized cash sale) ~ 100% cotton farmers	<10%	(Implicit credit) Highly variable, as farmers free to purchase input they wish. All use treated seed. Nearly all use some insecticides	US\$6-US\$8 for most farmers, 6%-18% of prod'n value. <10% uses ~ US\$110, 20% of prod'n value	

Note: Uganda's structure is competitive but its conduct currently is not, due to the regional quota system. It is therefore classified as a hybrid sector.

**Table 2. Summary Assessment of Performance on Input Supply and Extension, by Sector Type**

System type	Expected performance	Realized performance	Comments
Competitive	Little or no ability to provide input credit or extension	<p><b>Input:</b> Expectations partially confirmed. Early failed efforts in Uganda and Tanzania. Some success in later efforts. In Zimbabwe, coverage increased but service quality deteriorated.</p> <p><b>Extension:</b> Expectations fully confirmed in Tanzania; more success in later efforts in Uganda</p>	<ul style="list-style-type: none"> <li>• Current approach in Uganda achieves some success in both input supply and extension by eliminating competition for seed cotton (hybrid system)</li> <li>• Tanzania does not limit competition, relies on “forced” savings, but provides small quantities of chemicals and no fertilizer</li> <li>• No extension in TZ</li> <li>• Serious questions regarding long-term ability raise productivity (and quality) → questionable ability to compete long-term in world market</li> <li>• System may be especially unsustainable in countries with less fertile soils than Tanzania</li> </ul>
Concentrated, Market Based	Greater ability than competitive systems to provide basic input package on credit and some extension	<p><b>Input:</b> Expectations largely confirmed, but systems subject to structural instability and periodic default crises</p> <p><b>Extension:</b> Uneven performance across companies</p>	<ul style="list-style-type: none"> <li>• Key question: can effective coregulatory approaches emerge and persist in these countries, facilitating self-regulated competition that allows input credit supply? Zambia and Zimbabwe currently attempting to do this, without moving to a local monopoly system</li> </ul>
Local Monopoly	Greater ability than competitive systems to provide input credit and extension and ensure repayment; but lack of competition means firm “culture” and regulatory framework especially important	<p><b>Input:</b> Expectations largely confirmed, including variable performance across firms. Provide support to larger share of all farmers than do concentrated, market-based systems</p> <p><b>Extension:</b> Depends even more than input supply on company; some in Mozambique provide none</p>	<ul style="list-style-type: none"> <li>• Choose companies carefully!</li> <li>• Multinational firms observed to deliver superior performance in Mozambique, with stronger focus on productivity and quality</li> <li>• In absence of strong producer organizations, regulation falls on government, which will often be ineffective <ul style="list-style-type: none"> <li>• Credit default crises can still occur</li> </ul> </li> </ul>
National Monopoly	Greatest ability to provide broad access and ensure repayment; adequacy/quality indeterminate, dependent on management and firm culture	<p><b>Input:</b> Expectations confirmed, though performance in WCA heavily dependent on good management and substantial outside assistance</p> <p><b>Extension:</b> Tendency for messages to become obsolete and not adapted to sub-local conditions</p>	<ul style="list-style-type: none"> <li>• Incentive problems in monopoly can undermine performance over time <ul style="list-style-type: none"> <li>• Tendency not to update input package over time, leading to cost squeeze for farmers</li> </ul> </li> <li>• Political interference a recurrent problem in Mali and Burkina Faso (where SOFITEK still controls 85% of market), leading to other problems (e.g., pricing) that can undermine input supply and extension</li> <li>• Operational and financial strength of farmer organizations crucial to successful transition to another sector type; Cameroon best placed in this regard</li> </ul>

In hindsight, it appears clear that a short-lived production boom in 2004 and 2005 was due primarily to high prices in the two preceding years (Baffes, background paper on Uganda, 2007).

Under Tanzania's passbook system, farmers selling cotton receive a stamp in their passbook which entitles them to a value of seed or chemicals<sup>1</sup> the next year proportional to the amount of cotton they sold. For most farmers, the entitlement amounts to one or two chemical sprays and some seed the following year. The system is funded by a levy paid by ginners to CDF, which funds the importation of insecticides by private companies. Based on field interviews, Poulton and Maro (this project) suggest that the system has been "one contributory factor toward the major resurgence in cotton production in 2004 and 2005," but concludes that "the system can make only a limited contribution to the intensification of cotton production in Tanzania," since it can finance only limited insecticide sprays and no fertilizer applications.

**CONCENTRATED SYSTEM:** This is system where competition is allowed for the purchase of seed cotton. Only a few buyers are in the system. Countries with this type of system are Zambia and Zimbabwe though the later is becoming competitive because there are more buyers in the system now. **Zimbabwe** transitioned during the 1980s from a sector dominated by white commercial farmers to one with almost no such farmers, while building systems for effective input credit supply and extension assistance to a substantial minority of the new smallholder farmers. Cottco, the private company that emerged out of the government-owned CMB with a market share of 70 percent to 80 percent, continued this effective performance into at least the early 2000s and enjoyed credit repayment of 95 percent or higher in most years.

Between 2001 and 2004, the number of seed cotton buyers in Zimbabwe rose from 5 to 11, spurred by a fall in the real prices paid to

farmers by the major players<sup>2</sup>. Credit default increased, and Cottco dramatically reduced input credit in 2004/05. Though the company has since expanded its system again, credit default remains a major problem. Draft regulations to deal with the situation were developed in 2004, but never enacted. For the 2006/07 season, the sector is trying various approaches, including establishment of a code of good conduct that cotton companies must adhere to if they are to receive an export permit in future years.

An unusual result of Zimbabwe's move to a less concentrated system is that a substantially *larger* share of farmers received some form of input credit in 2006 than in the early 2000s. Whereas about 40 percent of growers received credit from Cottco or another company in 2002, nearly 95 percent received some type of support in 2006. However, regulation was a key driver of this result, and newer companies tend to provide seed of uncertain quality, and little or no insecticide.

As noted above, the entry of these new companies was also accompanied by large increases in credit default among farmers. In an echo of patterns seen. In Zambia, and especially in Mozambique widespread provision of very inadequate input packages has often been used as pretext to buy aggressively (and indiscriminately) during the harvest.

**Zambia's** cotton sector built relatively effective input credit and extension systems in the years following reform in 1994, consistently providing farmers with high quality treated seed, four- to six treatments of insecticides, and (for the top 20 percent or 30 percent of farmers) foliar feed fertilizers on 100 percent credit terms. Typical credit repayment was above 95 percent for Clark, and above 85 percent for Dunavant. As a result, the sector has seen slow but steady rises in the yields of established farmers and a near tripling of the total number of farmers

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<sup>1</sup> Seed has so far been included in the system but may be removed next year.

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<sup>2</sup> For more detail, see Tschirley et al. 2006 (forthcoming) and Poulton and Hanyani-Mlambo, background paper on Zimbabwe cotton sector, World Bank, 2007.

growing cotton over the past decade (Tschirley et al, 2004).

Despite the financial strength and high market shares of the two main companies, the sector has experienced two severe credit default crises since reform. The crisis of 1998-2000 was overcome as Dunavant and Clark strengthened their input credit supply and recovery and (especially for Clark/Cargill) extension systems, and demonstrated to most farmers the benefits of remaining loyal to the company. As a result, credit default receded as a problem, and production boomed through the 2006 harvest season. The second credit default crisis occurred in 2006 and 2007, again spurred by the entry of new companies<sup>3</sup>. Unlike in 1998 - 2000, it appears likely that at least some of these new companies will be able to remain important players in the sector.

In Zambia, as in Zimbabwe, the sector is struggling to find a regulatory approach to deal with these stresses. Dunavant and Cargill, along with two of the emerging companies and farmers as represented by Cotton Association of Zambia, are pushing for submission by the government to Parliament of the revised Cotton Act, which would create a cotton board with power to regulate the sector but not to participate as a buyer or seller.

Also as in Zimbabwe, ginner and buyers would have to abide by specified rules of conduct to be granted a license, and could be subject to fines and seizure of cotton if shown to be involved in the promotion of side selling.

A key point which emerges from this review is that concentrated, market-based systems may be unstable, with a recurring tendency to move to a more competitive structure. Tipping points may exist, in which the entry of two or three additional companies can dramatically change the prospects of coordination for input supply and extension (and quality control; see next chapter). As the number of players rises, input credit is the

first service to suffer, certainly in quality (in Zimbabwe) and also in the number of farmers served (in Zambia).

A key question which emerges is whether these systems will be successful in their efforts to establish enforceable rules of the game that ensure good pricing performance while safeguarding credit repayment.

**POLICY IMPLICATIONS:** Results from the comparative study show that, despite Zambia's relatively good performance well in the area of input credit provision because of the efforts of the two main cotton ginner and complemented in a modest way by the Cotton Outgrower Credit Scheme run by CDT.

However, the concentrated system found in Zambia is unstable, with rapid entry of new players periodically creating credit default crisis and undermining input credit provision. Therefore, to avoid problems requires highly collaborative regulation of the sector driven by all stakeholders. There are encouraging ideas towards a productive way forward, but significant implementation efforts will be needed. Firstly, the revised Cotton Act provides a framework under which this may be able to happen in Zambia. And secondly, recent activities of ZACOP, in collaboration with CAZ in pre-planting price negotiation are very much in this spirit.

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This Policy Synthesis draws directly from Tschirley et al (2007). "Comparative Analysis of Organization and Performance of African Cotton Sector: Learning from Experience of Cotton Sector Reform in Africa", forthcoming from World Bank

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<http://www.aec.msu.edu/fs2/zambia/index.htm> Please direct all inquiries to the In-Country Coordinator, Food Security Research Project, 86 Provident Street, Fairview, Lusaka; tel: 260 1 234539; fax: 260 1 234559; e-mail; [goverehj@msu.edu](mailto:goverehj@msu.edu)

\*Authors are Professor International Development, MSU and Research Associate, FSRP.

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<sup>3</sup> A sharp appreciation of the Kwacha from late 2006 through May or June 2007 was also a major factor.